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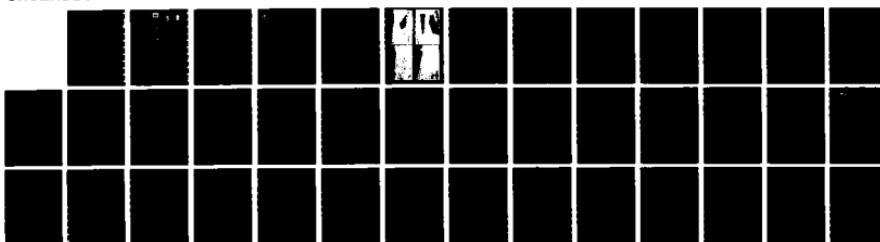
INITIAL APPRAISAL REPORT FOR SECTION 14 EMERGENCY
STREAMBANK PROTECTION M. (U) ARMY ENGINEER DISTRICT
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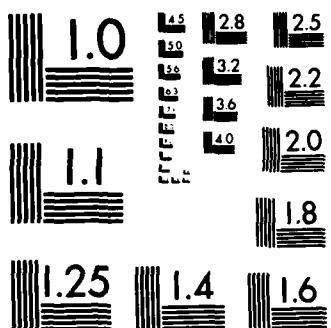
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AD-A171 835



US Army Corps
of Engineers
Rock Island District

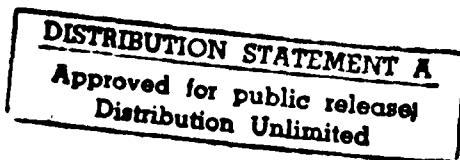
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**INITIAL APPRAISAL REPORT
FOR
SECTION 14
EMERGENCY STREAMBANK PROTECTION**

**MIDDLE RIVER
COUNTY ROAD P-48 BRIDGE
ADAIR COUNTY,
IOWA**

JUNE 1986

FILE COPY



REVISED JULY 1986
AND AUGUST 1986

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ACKNOWLEDGEMENT

Primary study team personnel who are familiar with the technical aspects of the study are listed below:

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ECONOMIC ANALYSIS	Sharryn Schroeder
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CULTURAL ANALYSIS	Kenneth Barr
ENGINEERING ANALYSIS	David Borck



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DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

REPLY TO
ATTENTION OF:
NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

Commander, North Central Division
ATTN: NCDPD-PP

1. INTRODUCTION

a. The following letter report summarizes a study for providing Section 14 emergency streambank protection along +200 linear feet of the right bank of the Middle River, just upstream from the County Road P-48 bridge, located in section 36, Harrison Township, Adair County, Iowa. (see plate 1, Encl 1). The Adair County engineer requested the assistance of the Rock Island District, U.S. Army Corps of Engineers, by letter dated 20 December 1985. A copy of the request letter is contained in the pertinent correspondence enclosure to this report (Encl 2).

b. This initial appraisal report for emergency streambank protection recommends placing riprap on rock bedding along +200 feet of the right bank of the Middle River, as it approaches the southwest abutment wingwall of the County Road P-48 bridge, to protect the bridge and roadway from erosion. The estimated total cost for the project is \$20,100, with a benefit-to-cost ratio of 1.3. The project satisfies the criteria for Federal participation and is recommended for construction under the authority of Section 14 of the 1946 Flood Control Act, as amended.

2. STUDY AUTHORITY

The authority for this study is Section 14 of the 1946 Flood Control Act, as amended by the Water Resources Development Act of 1974. The authority, as amended, is presented below:

That the Secretary of Army is hereby authorized to allot from any appropriations heretofore or hereafter made for flood control, not to exceed \$10,000,000 per year, for the construction, repair, restoration, and modification of emergency streambank and shoreline protection works to prevent damage to highways, bridge approaches, and public works, churches, hospitals, schools, and other nonprofit public services, when in the opinion of the Chief of Engineers such work is advisable: Provided, That not more than \$250,000 shall be allotted for this purpose at any single locality from the appropriations for any one fiscal year.

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

3. STUDY AREA

The study area, as shown on plate 1, is located at the County Road P-48 bridge over the Middle River, which is centered on the north-south line between sec. 36, T. 76 N., R. 30 W., Harrison Township, Adair County, and sec. 31, T. 76 N., R. 29 W., Jackson Township, Madison County, Iowa. The erosion site is approximately 11 miles east of Greenfield, and is located in section 36, Harrison Township, Adair County, Iowa.

4. DETAIL OF INVESTIGATION

This Emergency Initial Appraisal Report is intended to serve as the decision document with sufficient detail to allow approval of the project and preparation of plans and specifications.

5. RELATED STUDIES, REPORTS, AND EXISTING WATER PROJECTS

No previous studies have been made for this area by the Rock Island District, U.S. Army Corps of Engineers.

6. EXISTING CONDITIONS

a. An investigation of the erosion site was made by representatives of the Rock Island District with the Madison County, Iowa, Engineer on 29 October 1985. The study area extends from the south abutment of the County Road P-48 bridge to +200 feet upstream along the right bank of the Middle River. The eroded streambank is located along an outside bend in the river. The bridge is located on the north-south line between Adair and Madison Counties, Iowa (plate 2, Encl 1).

b. The Middle River flows in a southeasterly direction through the study area, then northeasterly through the eastern one-half of Madison County, and on through Warren County where it empties into the Des Moines River, approximately 12 miles southeast of Des Moines, Iowa. The river basin is rural and agricultural and has a drainage area of 161 square miles upstream of the project site.

c. Plate 2 shows that the Middle River flows toward the south abutment of the existing functional County Road P-48 bridge which facilitates two lanes of north-south traffic.

d. The area of erosion extends upstream from the existing south bridge abutment for a distance of +200 feet. The county reports that the bank is eroding at a rate of 7.5 feet per year; however, since the initial investigation by the Corps on 29 October 1985, heavy rains have exposed the abutment wingwall of the bridge and eroded the bank further so that the top of bank is now at the toe of the approach roadway to the bridge, a horizontal distance of about 5 feet from the edge of the road. Both Adair and Madison county engineers have expressed their concerns over this imminent situation. It is reported that the road has a daily traffic count of 62 vehicles.



LOOKING WEST AT ERODED BANK
FROM SOUTH END CO. RD. P-48 BRIDGE.



LOOKING WEST AT ERODED SOUTH BANK FROM
CENTER OF RIVER BENEATH CO. RD. P-48 BRIDGE.



LOOKING SOUTH AT ERODED BANK NEAR UP-
STREAM BRIDGE ABUTMENT WINGWALL



LOOKING AT EROSION AROUND SOUTH
BRIDGE ABUTMENT WINGWALL

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

7. FUTURE CONDITIONS WITHOUT PROJECT

The failure of the existing upstream wingwall of the south bridge abutment, with additional approach roadway damage, is imminent without a project to curtail erosion at the study site. With this failure, the bridge would have to be closed and traffic would be detoured 5 miles around the site.

8. PLANNING OBJECTIVES

a. National Objective. The plan formulation process to accomplish erosion damage reduction is formulated and directed by a national planning objective consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements.

(1) Water and related land resources project plans should be formulated to alleviate problems and take advantage of opportunities in ways that contribute to this objective.

(2) Contributions to the National Economic Development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct benefits that accrue in the planning area and the rest of the Nation, and include increases in the net value of those goods and services that are marketed, and of those that may not be marketed.

b. Specific Objectives.

(1) To prevent economic losses resulting from the closure of the County Road P-48 bridge of Adair and Madison Counties, Iowa, and/or the temporary closure of the south approach road thereto.

(2) To preserve and enhance, when practical, existing natural ecological systems and cultural resources and to minimize adverse impacts of flood damage reduction measures on these resources.

9. PLANNING CONSTRAINTS

a. This study is constrained by all laws of the United States and by the State of Iowa, all executive orders of the President, and all engineering regulations of the Corps of Engineers.

b. This study also is constrained by the study authority as stated in paragraph 2 of this report.

10. ALTERNATIVE SOLUTIONS

Riprap protection, channel bypass, concrete-filled mattress, and no action all were considered as alternative solutions to control the erosion problem.

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

Channel bypass is not an acceptable alternative because of its high construction cost and environmental concerns. Concrete-filled mattress protection also was not acceptable because of its higher construction cost. Riprap on rockfill and/or bedding is considered to be the least expensive and the most environmentally acceptable solution for controlling the erosion problem at the study site and, therefore, is chosen as the selected plan.

11. SELECTED PLAN

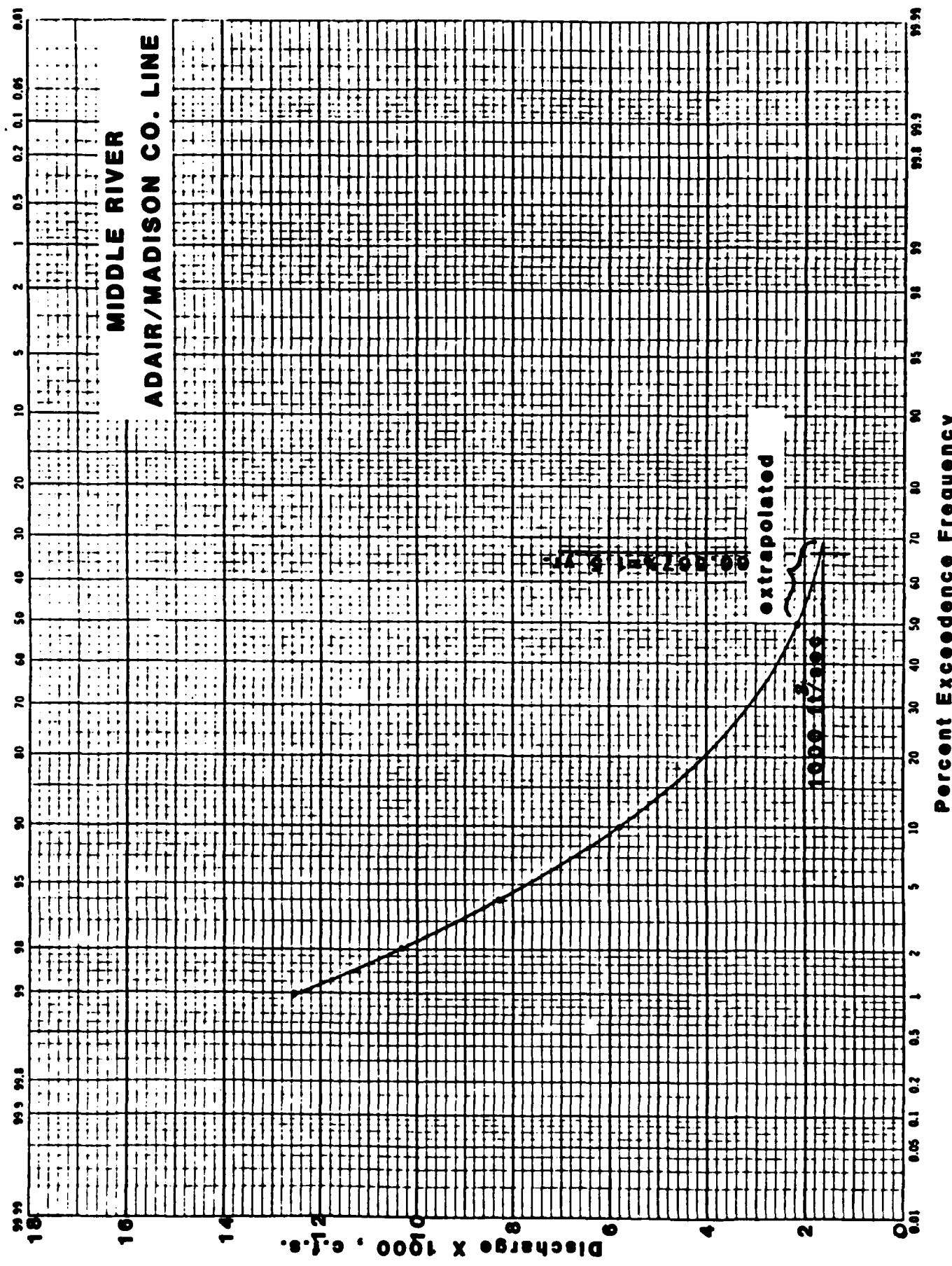
The selected plan is to protect +200 linear feet of eroding riverbank with 75 cubic yards of bedding and/or rockfill and 350 tons of riprap. The finished bank slope will be 1 vertical on 2 horizontal. The existing +200 feet of eroded bank will be shaped prior to placing any bedding and riprap. The riprap slope blanket thickness will be 12 inches and will be protected on the upstream end. See plates 2 and 3 (Encl 1) for details of the selected plan.

12. HYDRAULIC ANALYSIS AND RIPRAP DESIGN

a. Stream gage data are not available for the study area. Cross-section geometry was estimated during a site visit (plate 3). The discharge was estimated assuming bank-full conditions.

b. Two methods were used to estimate the bank-full discharge. The first method used Manning's equation. Using a channel roughness value of 0.045, a channel slope of 5 feet per mile, and the aforementioned cross-section geometry, resulted in a discharge of 1,000 cubic feet per second (ft^3/s) and an average velocity of 3.3 feet per second (ft/s). The results are affected by the assumption of uniform flow and a channel slope based on topographical information with 20-foot contour intervals.

c. The second method follows the alpha method described in EM 1110-2-1601. The purpose of this method is to determine local velocities for subdivided sections of the channel cross section. A discharge must be assumed in order to determine these local velocities. Technical literature indicates a return period of 1.5 years for bank-full discharge. To obtain this discharge, regional frequency equations developed by the U.S. Geological Survey for Iowa were used. These results are shown on Figure 2, which indicates a 1.5-year discharge of about 1,600 ft^3/s . The cross section was subdivided into two sections: one for the riprapped bank and the other for the remaining natural channel. The assumed riprap size used a W_{50} of 26 pounds (max.) and 17 pounds (min.); the natural channel roughness was estimated to be 0.045. The resulting local velocity at the eroded bank is 4.2 ft/s , which was the selected design velocity.



NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

d. The riprap was designed in accordance with procedures outlined in EM 1110-2-1601 and ETL 1110-2-120. The riprap design shear must exceed the local boundary shear. Using the aforementioned riprap size, the local boundary shear was determined using the following equation:

$$\gamma_o = (1.5) (1.5) \frac{\gamma \bar{v}^2}{\left(32.6 \log 10 \frac{12.2R}{D_{50}} \right)^2}$$

WHERE $\gamma = 62.4$ p.c.f.

$\bar{v} = 4.2$ ft/s

$R = 4.5$

D_{50} = Max. avg. stone diameter, ft.

1.5 = Non-uniform flow factor and bend-effect coefficient

$\gamma_o = 0.67$ p.s.f.

The riprap design shear was determined using the following equation:

$$\gamma' = a (\gamma_s - \gamma) D_{50} \left(1 - \frac{\sin^2 \phi}{\sin^2 \Theta} \right)^{0.5}$$

WHERE $a = 0.040$

$\gamma_s = 165$ p.c.f.

$\gamma = 62.4$ p.c.f.

D_{50} = Min. avg. stone diameter, ft.

ϕ = Angle of side slope with horizontal for a side slope of 2H:1V.

Θ = Riprap angle of repose = 40°

$$\gamma' = 1.76 \text{ p.s.f.} > 0.67 \text{ p.s.f.} \therefore \text{O.K.}$$

e. The following is the required minimum riprap gradation:

<u>% Lighter By Weight</u>	<u>Limits of Stone Wt., Lbs.</u>
100	86-35
50	26-17
15	13- 5

Riprap blanket thickness = 12 inches. The toe of the riprap blanket should extend at least 5 feet from the base of the bank at a thickness of 18 inches. The upstream end of the riprap blanket is to be keyed into the slope at a depth of at least 2 feet for a width of 3 feet. See plate 3 for specific details of this project.

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

13. ENVIRONMENTAL ANALYSIS

a. The project area is the right descending bank of the Middle River at the Adair/Madison County line. Erosion is occurring along the outside bend of the river and is threatening the south abutment and wingwall and approach roadway to the County Road P-48 bridge.

b. The eroding bank is about +10 feet high from river bottom to the top of bank. A narrow band of vegetation exists between the riverbank and an adjacent farm field along the north +200 feet of the proposed construction area. The vegetation is primarily herbaceous with two or three shrub- or sapling-sized woody species. Impacts to natural resources would be primarily from the loss of this vegetation and would be considered moderate. Continued erosion also would result in the loss of this vegetation.

c. In a letter dated 13 March 1986, the Iowa State Historic Preservation Officer (SHPO) requested that an archeological survey be conducted prior to land-altering activities for the proposed Adair County emergency bank stabilization project. In response to this request, a Rock Island District archeologist visited the site area on 5 June 1986. A walkover survey of the agricultural field immediately adjacent to the bank to be stabilized and careful observations along the +200 foot cutbank failed to identify any cultural features or artifacts. The details of this archeological survey, with an opinion that the proposed project will have No Effect on significant cultural resources, were provided to the Iowa SHPO by letter dated 11 June 1986.

d. One federally listed endangered species, the Indiana bat (Myotis sodalis), has been reported for Madison County, Iowa. Habitat fitting the description of that typically used by the Indiana bat is not found in the project area, so the proposed project is not anticipated to have any effect on the bat.

e. The District Engineer has determined that damage to a public road and bridge is imminent without immediate action. Sufficient time does not exist to prepare and process a National Environmental Policy Act (NEPA) document. The proposed project is therefore exempted from the requirements of NEPA (ER 200-2-2, Para 8a, CFR 230).

f. Aspects of the project of concern under Section 404 of the Clean Water Act are covered by nationwide permit with pre-issuance of Section 401 certification. A public notice under Section 404 of the Clean Water Act will therefore not be issued. Grading and shaping operations (i.e., cut and fill activities) will involve existing bank materials, and bedding rock and riprap will be chemically stable. The overlying riprap layer will result in a physically stable bankline.

SUBJECT: Initial Appraisal Report for Section 14 Emergency
 Streambank Protection, Middle River, County Road P-48
 Bridge, Adair County, Iowa

g. Necessary coordination with Federal and State agencies has been accomplished by personal conversation and by telephone. Copies of conversation records can be found in Encl 2.

14. REAL ESTATE REQUIREMENTS

The project involves protection to +200 linear feet of riverbank and requires two permanent easements: one area +200 feet by +45 feet (+0.2 acre) along the riverbank for the erosion protection, and one area +200 feet by +40 feet (+0.18 acre) to allow access to the project. Both areas needed are to be permanent for the construction, operation, and maintenance of the erosion protection project. The estimated cost for this acquisition is \$4,000. There are no structures within the project limits, and no families or businesses will be displaced by the project.

15. ECONOMIC ANALYSIS

a. Demography - Adair County and Madison County are basically agricultural districts located in the southwestern portion of Iowa. In recent decades, populations for both Adair County and Madison County have declined, while population for the State has experienced moderate growth. These population trends are presented in table 1.

TABLE 1

Population Trends*

Area	1970	Population			1980-1985	Percent Change 1985-1990
		1980	1985	1990		
Adair County	3,654	4,021	3,635	3,588	-9.6	-1.2
Madison County	9,487	9,509	9,100	8,700	-4.3	-4.4
State of Iowa	2,825,368	2,913,808	2,905,400	2,913,500	-0.3	+0.3

*Sources:

1980 Census of Population, Volume 1, Characteristics of Population, Claritas Corp., REZIDE, 1980 and 1985, The National Encyclopedia of Residential Zip Code Demography.

Iowa Population Projections: 1980-2000, July 1984, Office for Planning and Programming.

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

b. Methodology - The purpose of this economic analysis is to study the feasibility of initiating Federal action to protect the County Road P-48 bridge abutment wingwall and approach road from damages associated with erosion of the right bank of the Middle River. The Federal action proposed is to place riprap on rock bedding along ± 200 feet of the south bank as shown on plate 2. This proposal would prevent further erosion for a period of 50 years, if properly maintained. April 1986 price levels were used for this economic analysis.

c. Benefits of Federal Action - The benefits of Federal action are derived from a consideration of what will occur if no Federal action is taken. Without Federal action, the county will have to provide bank stabilization measures to protect the southwestern abutment wingwall of the County Road P-48 bridge and the bridge approach road. County officials indicate that limited funding is available for immediate bank replacement at a cost of \$3,500. If the bridge wingwall and approach road fail, the county would have to reroute traffic on an existing road, repair the riverbank, and replace the wingwall and approach. This study evaluates benefits from these three sources.

(1) Savings in Bank Replacement Costs - The cost of immediate bank repair is estimated at \$3,500, based up on the county's limited funds and the work they would perform without a Federal action. Even with these local protection efforts, erosion would continue and the bridge wingwall and approach road would be threatened again 7 years. The cost for a future year was discounted at an 8-5/8 percent discount rate and then annualized to represent average annual benefits. Average annual benefits for bank repairs are shown in table 2.

(2) Savings in Bridge Wingwall and Approach Road Replacement Costs - With the present rate of erosion of the right bank of the Middle River continuing at the historic rate of 7 feet per year, it is most likely that flooding will cause failure of the protection placed by the county, as well as the southwestern abutment wingwall of the County Road P-48 bridge and the bridge approach road. The cost of replacing the bridge wingwall, riprap, and approach road is estimated at \$17,000 and would be incurred by year 7. This cost was discounted at an 8-5/8 percent discount rate and then annualized to produce average annual benefits. Average annual benefits for bridge wingwall and approach road replacement are displayed in table 2.

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
 Streambank Protection, Middle River, County Road P-48
 Bridge, Adair County, Iowa

TABLE 2

Summary of Replacement Costs
Without Federal Action

Category	Year (A)	Damages (\$) (B)	Present Worth Factor (C)	Present Worth of Damage (\$) (B*C=D)	Capital Recovery Factor (E)	Average Annual Damage (D*E)
County Protection	0	3,500	1.00000	3,500	0.08765	300
Wall & Approach	7	17,000	0.56039	9,500	0.08765	830
Detour Cost	7	26,800	0.56039	15,000	0.08765	1,300
Total		47,300		28,000		2,430

(3) Detour Losses - Without Federal action, it is expected that County Road P-48 will be closed to traffic. The closure would last for 1 year until funds can be obtained and repairs made. During the period of closure, it will be necessary for motorists to travel an alternate route. Motorists using a detour route will incur costs not only from added vehicle operation, but from increased travel time as well. Benefits derived from avoided detour losses were computed based on the following:

- (a) Traffic on County Road P-48 was 62 vehicles per day in 1985.
- (b) Passenger vehicles account for 80 percent of the traffic on this road, while the remaining 20 percent of traffic is comprised of school buses, heavy trucks, farm machines, and mail vehicles;
- (c) The average detour length for vehicles using the road would be 5 miles. Detour mileages were estimated using county highway maps and a combination of logical origins and destinations for motorists using the road;
- (d) Commuter vehicles would have a driver and no occupants. Local user passenger cars would have an average of 2.4 occupants, while school buses would have an average of 15 occupants (1 driver and 14 children);

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency Streambank Protection, Middle River, County Road P-48 Bridge, Adair County, Iowa

(e) The value of time for adults and children was assumed to equal 1/3 and 1/12 of the average hourly wage rate, respectively. The Adair/Madison County, Iowa, area 1985 average hourly wage was \$4.96. Twenty-eight (28) percent of the area residents are under the age of 18; therefore, the opportunity cost of time for local user passenger cars equals \$1.31 an hour per occupant ($\$4.96 \times .72 \times 1/3 + \$4.96 \times .28 \times 1/12 = \1.31). For commuter passenger cars, the opportunity cost of time amounts to \$1.65 an hour per occupant, assuming that all occupants are over 18 years of age ($\$4.96 \times 1/3 = \1.65);

(f) Approximate hourly wage rates were used as values of time for bus drivers (\$7.70), mail carriers (\$12.00), farm machine operators (\$9.20), and commercial size (heavy) truck operators (\$9.20). School buses require an opportunity cost of time amounting to \$13.48 an hour for 1 driver and 14 children ($\$7.70 + \$4.96 \times 14 \times 1/12 = \13.48); and

(g) The average variable cost of operating passenger cars and mail vehicles is \$0.14 per mile; buses, \$0.40 per mile; heavy trucks, \$0.46 per mile; and farm machines, \$0.77 per mile. These figures were based on average maintenance, repair, accessory, tire, fuel, and oil costs including taxes on gasoline, oil, and tires.

(h) Avoided detour costs include benefits from both increased vehicle operation and increased travel time. As shown in tables 3a and 3b, detour losses due to increased vehicle operation and increased travel time amount to \$18,750 and \$8,220, respectively. Total detour costs of \$26,800 would be incurred in year 7. These costs were discounted at an 8-5/8 percent discount rate and then annualized, resulting in average annual benefits of \$1,300 for detour losses. These benefits were shown in table 2.

TABLE 3a

Summary of Vehicle Operating Costs
One-Year Road Detour

<u>Vehicle Type</u>	<u>Extra Mileage Per Trip (A)</u>	<u>Average Number of Trips Per Day (B)</u>	<u>Detour Days Per Year (C)</u>	<u>Operating Cost Per Mile (D)</u>	<u>Total Cost Per Year (A*B*C*D)</u>
Passenger Vehicles:					
Commuters	5	40	240	0.14	6,720
Local Users	5	10	365	0.14	2,560
School Buses	10	4	180	0.40	2,900
Heavy Trucks	3.5	3	365	0.46	1,760
Farm Machines	5	5	225	0.77	4,330
Mail Vehicles	7	1	300	0.14	300
TOTAL COST = 18,570					

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

TABLE 3b

Summary of Opportunity of Time Costs
One-Year Road Detour

<u>Vehicle Type</u>	<u>Average Number of Trips Per Day (A)</u>	<u>Detour Days Per Year (B)</u>	<u>Travel Time In Hours (C)</u>	<u>Opportunity Cost of Time Per Hour (D)</u>	<u>Total Cost Per Year (A*B*C*D)</u>
Passenger Vehicles:					
Commuters	40	240	0.125	1.31	1,570
Local Users	10	365	0.125	3.14	1,430
School Buses	4	180	0.250	13.48	2,420
Heavy Trucks	3	365	0.875	9.20	880
Farm Machines	5	225	0.125	9.20	1,290
Mail Vehicles	1	300	0.175	12.00	630
TOTAL COST = 8,220					

d. Cost of Recommended Federal Action - Federal action involves placing riprap along +200 linear feet of the right bank of the Middle River. The total first cost of this project is estimated at \$20,100. Detailed project first costs and average annual costs computed at an 8-5/8 percent discount rate over the 50-year period of analysis are shown in tables 4 and 5. Annual maintenance cost was calculated assuming 50 percent of the riprap would be replaced in 25 years. Because of the short construction period, no interest during construction was calculated. A summary of benefits and costs for the proposed Federal action is presented in table 6. As shown, the proposed Federal project is economically feasible.

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
 Streambank Protection, Middle River, County Road P-48
 Bridge, Adair County, Iowa

TABLE 4

Cost Estimate

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Federal Cost (\$)</u>	<u>Non-Federal Cost (\$)</u>
Site Preparation	200	L.F.	5.00	1,000	---
Bedding	75	C.Y.	20.00	1,500	---
Riprap	350	Ton	25.00	8,800	---
Real Estate (Permanent & Temporary Easement Acquisition, Lands and Damages)	---	---	---	---	4,000
Subtotal				11,300	4,000
Contingencies (25 percent)				2,800	---
Subtotal				14,100	4,000
Engineering & Design (6 percent)				850	---
Supervision & Administration (8 percent)				1,150	---
Total (Plus Non-Federal Cost)				16,100 $\underline{+ 4,000}$	4,000
TOTAL PROJECT COST				\$20,100	

e. Cost Apportionment - Recent Federal policy requires new construction cost-sharing for Section 14 projects awarded after 1 October 1986. Project cost-sharing is in accordance with the provisions agreed to by the Administration and the Senate majority leadership, and is designed to provide consistency among projects and programs and equity among sponsors of comparable works. Under these provisions, the non-Federal project sponsor would provide, prior to advertisement of the construction contract, an amount equal to 25 percent of the estimated total project cost. The amount to be provided includes all lands, easements, rights-of-way, and utility and facility alterations and relocations required for construction of the project, as well as a cash payment equal to the difference between the value of the above items and 25 percent of the estimated total project cost; provided, however, that in no case shall the cash payment required be less than 5 percent of the estimated total project cost. Table 4a shows the project cost apportionment.

TABLE 4a

Cost Apportionment

Estimated Total Project First Cost - \$20,100

Non-Federal

25% County Share (Total Non-Federal Cost Apportionment)	\$5,025
Less Credit (Real Estate)	<u>-4,000</u>
 Total Cash Payment Required	 \$1,025

Federal

Estimated Total Project Cost	\$20,100
Less 25% Non-Federal Share	<u>- 5,025</u>
 TOTAL FEDERAL COST APPORTIONMENT	 \$15,075

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

TABLE 5

<u>Annual Cost of Plan</u>		
	<u>First Cost</u> <u>(\$)</u>	<u>Annual Cost</u> <u>(\$)</u>
Federal Cost	16,100	
Non-Federal Cost	<u>4,000</u>	
Total First Cost	20,100	1,760
Operation & Maintenance [(pw25 x .5 x 11,300)CRF]		<u>60</u>
Total Annual Cost		1,820

TABLE 6

Summary of Benefits and Costs

<u>Description</u>	<u>Amount</u>
Project First Cost	\$20,100
Annualized First Cost	\$ 1,760
Annual Maintenance Cost	\$ 60
Total Annual Cost	\$ 1,820
Average Annual Benefits	\$ 2,430
Net Benefits	\$ 570
Benefit/Cost Ratio	1.3

16. PLAN IMPLEMENTATION.

a. Corps of Engineers - This report will be processed for approval of the selected plan of action and the authorization of funding for construction. Upon approval and appropriation of funding by the Office of the Chief of Engineers, the Rock Island District will be responsible for the preparation of plans and specifications and the construction of the project.

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency Streambank Protection, Middle River, County Road P-48 Bridge, Adair County, Iowa

b. Coordination - Coordination is being maintained with the following State and Federal agencies:

U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
Iowa Conservation Commission
Iowa State Historic Preservation Officer
Iowa Department of Water, Air, & Waste Management

c. Adair County, Iowa

(1) Adair County, Iowa, Highway Department has agreed to act as local sponsor for the proposed project. Initial coordination has been completed. The local cooperation agreement requirements are:

(a) Provide without cost to the United States all real estate interests necessary for the project:

(b) Hold and save the United States free from damages due to the construction, operation, and maintenance of the project, except where such damages are due to the fault or negligence of the United States or its contractors;

(c) Maintain and operate the project, or integral parts thereof, in accordance with regulations prescribed by the Secretary of the Army;

(d) Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved 2 January 1971, in acquiring lands, easements, and rights-of-way for construction and subsequent maintenance of the project and inform affected persons of the pertinent benefits, policies, and procedures in connection with said act;

(e) Comply with Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.11 issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, in connection with the maintenance and operation of the project; and

(f) Contribute all project costs in excess of the Federal statutory limitation of \$250,000.

(g) Provide, prior to advertisement of the construction contract, an amount equal to 25 percent of the estimated total project cost. The amount to be provided shall include all lands, easements, rights-of-way, and utility and facility alterations and relocations

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14 Emergency
Streambank Protection, Middle River, County Road P-48
Bridge, Adair County, Iowa

required for construction of the project, as well as a cash payment equal to the difference between the value of the above items and 25 percent of the estimated total project cost; provided, however, that in no case shall the cash payment required be less than 5 percent of the estimated total project cost.

(2) In addition, the County must enter into an agreement containing the foregoing items of local cooperation and which will give the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls, for access to the project for the purpose of inspection. If such inspection shows that the County for any reason is failing to operate and maintain the project in accordance with the assurances hereunder and has persisted in such failure after a reasonable notice in writing by the Government delivered to the Adair County Engineer, the Government shall have the further right, as stated above, to enter upon the land for the purpose of operating and maintaining the project. Operation or maintenance by the Government in such event shall not operate to relieve the County of responsibility to meet its obligations as set forth in the agreement, or to preclude the Government from pursuing any other remedy at law or equity.

The total estimated non-Federal cost apportionment is \$4,000 for real estate acquisition, plus a cash contribution of \$1,025. It is anticipated that the County will have to invest \$60 annually to replace lost stone during the 50-year project life.

17. RECOMMENDATION.

I recommend that the plan selected herein to provide bedding rock and riprap material to protect County Road P-48 bridge from erosion by the Middle River in Adair County, Iowa, be authorized for implementation as a Federal project with a total cost apportionment to the United States presently estimated at \$15,075.



3 Encl
1. Plates
2. Pertinent Corres
3. Dist List

WILLIAM C. BURNS
Colonel, Corps of Engineers
Commanding

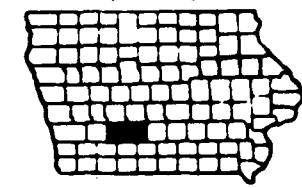
PLATES

ENCL 1

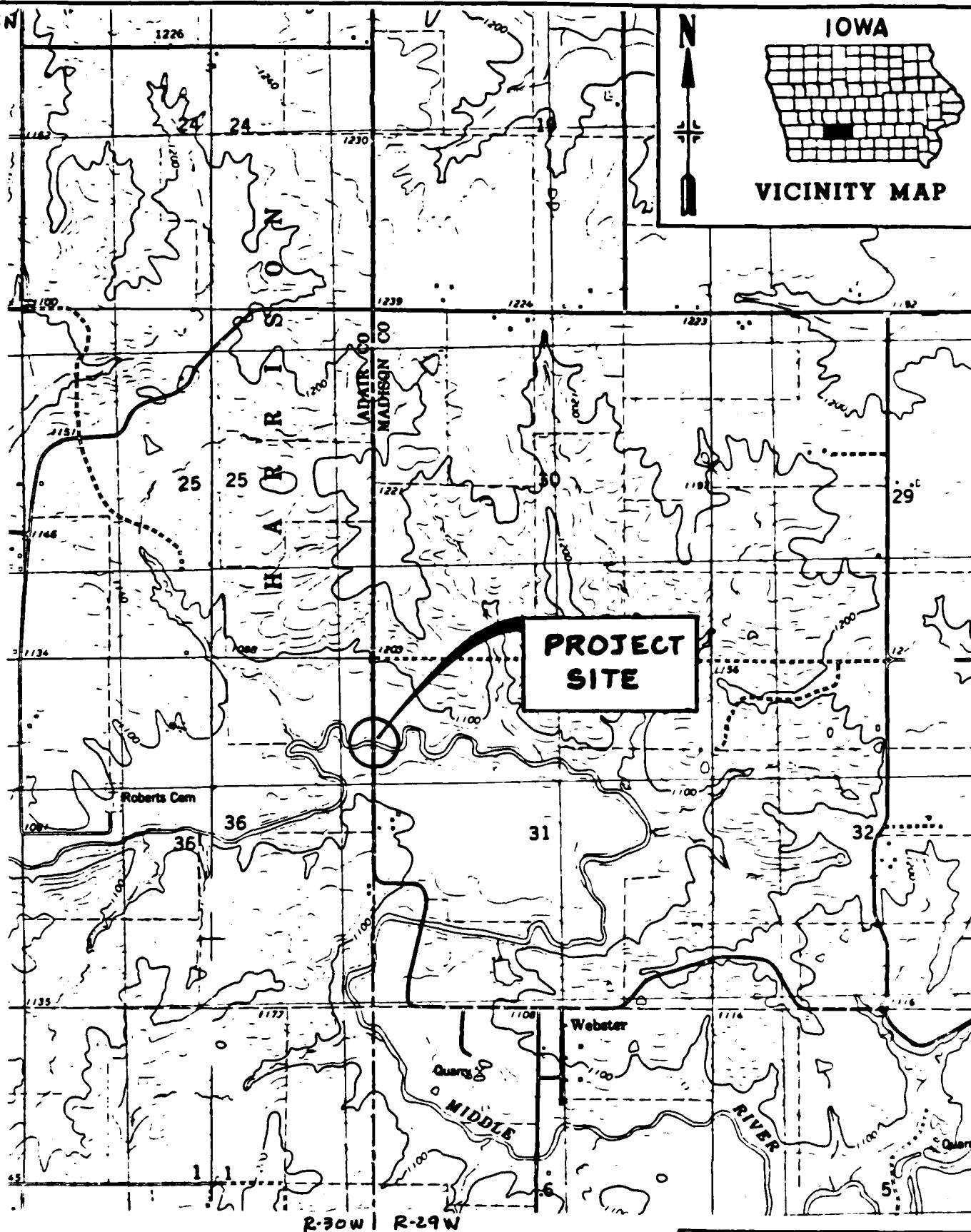
T-75 N

1226

IOWA



VICINITY MAP



0 0.5 1.0
SCALE IN MILES

MIDDLE RIVER
CO. RD. P-48 BRIDGE
BANK EROSION
ADAIR/MADISON CO., IOWA
PROJECT LOCATION

PLATE 1

E CO. ROAD P-48



ADAIR
COUNTY

MADISON
COUNTY

EXISTING
SAND BAR MATL.

MIDDLE

RIVER

A

± 200'

RIPRAP SLOPE END
PROTECTION - FOR
DETAILS AND TYP-
ICAL SECTION A-A
SEE PLATE 3.

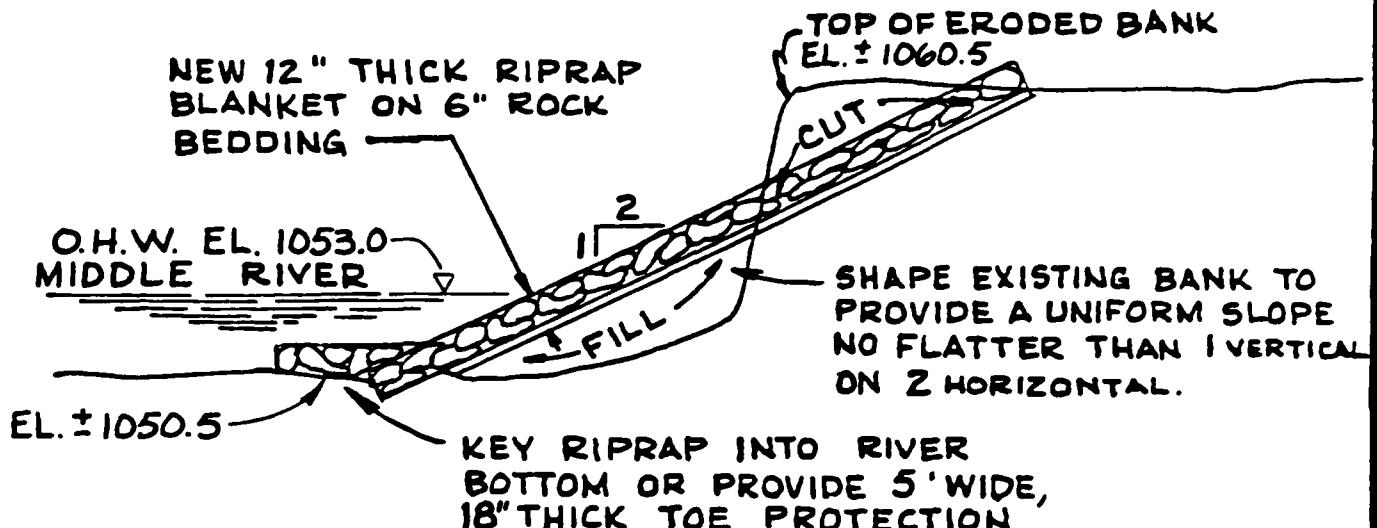
0 50 100
SCALE IN FEET

MIDDLE RIVER
CO. RD. P-48 BRIDGE
BANK EROSION

ADAIR/MADISON CO., IOWA

PLAN

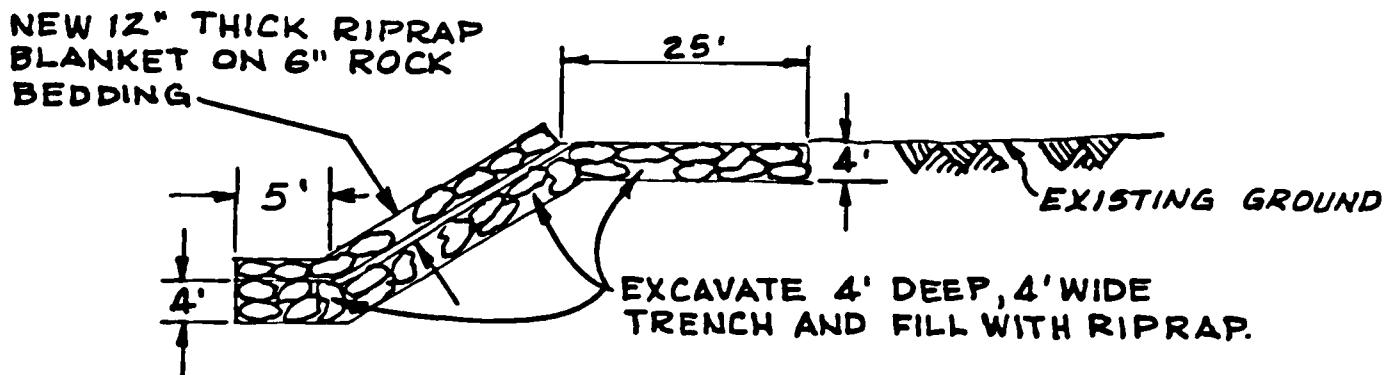
PLATE 2



NOTE:

TREES AND WOODY VEGETATION ALONG 200' OF RIVERBANK TO BE REMOVED AS REQUIRED.

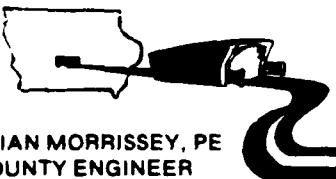
SECTION A-A



SECTION THRU END PROTECTION

MIDDLE RIVER
CO. RD. P-48 BRIDGE
BANK EROSION
ADAIR/MADISON CO., IOWA
TYPICAL SECTION

PERTINENT CORRESPONDENCE



OFFICE OF

MADISON COUNTY ENGINEER

J. BRIAN MORRISSEY, PE
COUNTY ENGINEER

RAY GARDNER, Assistant to County Engineer
TODD FONKERT, PE, Assistant to County Engineer
GLENN KORDICK, Field Assistant
TIM WADDINGTON, Office Manager

WINTERSET, IOWA 50273-0152

515-462-1136

December 20, 1985

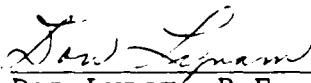
District Engineer
US Army Engineer District, Rock Island
Clock Tower Building
Rock Island, Illinois 61201

Dear Sir:

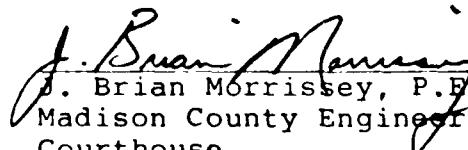
This letter is to seek the assistance of the US Army Corps of Engineers under Section 14 of the 1946 Flood Control Act, in providing erosion protection to a bridge located on the Adair and Madison County, Iowa line. The bridge is located on the west side of Section 31, T-76N, R-29W, Madison County, Iowa.

Your consideration of this request would be greatly appreciated. In the event that you desire additional information, please contact Don Lynam, Adair County Engineer or J. Brian Morrissey, Madison County Engineer.

Sincerely,



Don Lynam, P.E.
Adair County Engineer
Courthouse
Greenfield, IA 50849



J. Brian Morrissey, P.E.
Madison County Engineer
Courthouse
Winterset, IA 50273

JBM/wb

Office of Adair County Engineer

DONALD J. LYNAM, P.E.
515-743-6111

Court House
P.O. Box 196
Greenfield, Iowa 50849

May 9, 1986

Colonel William G. Burns
District Engineer
U.S. Army Engineer District, Rock Island
Clock Tower Building - P. O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Burns:

Adair County has reviewed the draft of the proposed Local Cooperation Agreement covering stream bank erosion control on Middle River on P48. The Agreement includes the following obligations to be carried out by Adair County:

- a. Provide without cost to the United States all real estate interests necessary for the project;
- b. Hold and save the United States free from damages due to the construction, operation, and maintenance of the Project, except where such damages are due to the fault or negligence of the United States or its contractors;
- c. Maintain and operate the project, or integral parts thereof, in accordance with regulations prescribed by the Secretary of the Army;
- d. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved January 2, 1971, in acquiring lands, easements, tenance of the Project and inform affected persons of the pertinent benefits, policies, and procedures in connection with said Act;
- e. Comply with Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.11 issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, in connection with the maintenance and operation of the project; and
- f. Contribute all Project costs in excess of the Federal statutory limitation of \$250,000. Adair County agrees that, in the event non-Federal funds are required pursuant this paragraph, it will, prior to award of any contract covering the work, provide such non-Federal funds upon receipt of and in accordance with a written request therefore from the undersigned Contracting Officer or his successor.

g. In addition to subparagraph f. above, Adair County agrees to cost-share 25 percent of the total project costs, which may include the costs of rights-of-way and other items for this type of project, with no less than 5 percent of the total project costs being a cash payment.

Adair County hereby gives the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls, for access to the Project for the purpose of inspection. If such inspection shows that Adair County for any reason is failing to operate and maintain the Project in accordance with the assurances hereunder and has persisted in such failure after a reasonable notice in writing by the Government delivered to the Adair County Engineer of Adair County, the Government shall have the further right, as stated above, to enter upon the land for the purpose of operating and maintaining the project. Operation or maintenance by the Government in such event shall not operate to relieve Adair County of responsibility to meet its obligations as set forth in the Agreement, or to preclude the Government from pursuing any other remedy at law or equity.

This is to advise that if the Bank Erosion is approved substantially in its present form as reviewed by Adair County and as submitted for approval by Corps higher authority, Adair County is willing, and legally and financially able, to sign the referenced Local Cooperation Agreement which includes the obligations set forth above.

Sincerely yours,



ADAIR COUNTY
Donald J. Lynam, P.E.
Adair County Engineer

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE

2 MAY 1986

SUBJECT OF CONVERSATION

SECT 14 AUTHORITY, MIDDLE RIVER, Co. ROAD P-48, ADAIR / MADISON Cos, IA.

		INCOMING CALL	
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION	
JOE SCHWARTZ	SUPV., FISHERY BIOLOGY, IOWA Cons. Comm.	(712) 769-2587	
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION	
Bob Vanderjack	NCRPD-E	Ext 385	
OUTGOING CALL			
PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION	
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION	

SUMMARY OF CONVERSATION:

1. Mr Schwartz was returning my earlier call when I had explained the proposed project, that there would be no NEPA document prepared because of the emergency nature of the problem, and that Sect. 404 aspects of the project were covered by nationwide permit.
2. Mr Schwartz had visited the site and said that he did not think his agency would have any objections to the project.
3. Mr Schwartz had relayed his observations at the project site to his wild life biology counterpart (i.e. Mr Robert Moore) who concurred that their agency would not object to the project.

Bob Vanderjack

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE

8 MAY 1986

SUBJECT OF CONVERSATION

SECT. 14 AUTHORITY, MIDDLE RIVER, CO. ROAD P-48, ADAIR/MADISON C.G.s, IA.

INCOMING CALL		
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION
OUTGOING CALL		
PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
Bob Vanderjack	NCRPD-E	X-385
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
Bob Barber	U.S. EPA KANSAS CITY, KANSAS	(913) 236-2823

SUMMARY OF CONVERSATION:

1. I CALLED MR. BARBER AND EXPLAINED THE PROPOSED PROJECT, THAT THERE WOULD BE NO NEPA DOCUMENT PREPARED BECAUSE OF THE EMERGENCY NATURE OF THE PROBLEM, AND THAT SECT. 404 ASPECTS OF THE PROJECT WERE COVERED BY NATIONWIDE PERMIT.
2. MR BARBER SAID THAT HE DIDN'T THINK HIS AGENCY WOULD HAVE ANY OBJECTIONS TO THE PROJECT.

Bob Vanderjack
PD-E

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE

12 MAY 1986

SUBJECT OF CONVERSATION

SECT. 14 AUTHORITY, MIDDLE RIVER, CO. ROAD P-48 ADAIR/MADISON
CO'S, IOWA

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION

OUTGOING CALL

PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
BOB VANDERJACK	NCRPD-E	X-385
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
WAYNE FISHER	U.S. FISH AND WILDLIFE SERV. ROCK ISLAND, ILLINOIS	(309) 793-5800

SUMMARY OF CONVERSATION:

1. THE U.S. FISH AND WILDLIFE SERVICE FIELD OFFICE IN Rock Island, Illinois was visited on 12 May 1986.
2. I TALKED TO MR WAYNE FISHER AND EXPLAINED THE PROPOSED PROJECT, THAT THERE WOULD BE NO NEPA DOCUMENT BECAUSE OF THE EMERGENCY NATURE OF THE PROBLEM, AND THAT SECT. 404 ASPECTS OF THE PROJECT WERE COVERED BY NATIONWIDE PERMIT WITH PRE-ISSUANCE OF SECT. 401 CERTIFICATION.
3. MR FISHER SAID THAT HE DIDN'T THINK HIS AGENCY WOULD HAVE ANY OBJECTIONS TO THE PROPOSED PROJECT.

Bob Vanderjack

TELEPHONE OR VERBAL CONVERSATION RECORD For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.		DATE 15 May 1986
SUBJECT OF CONVERSATION SECT. 14 AUTHORITY, MIDDLE RIVER, CO. ROAD P-48, ADAIR/MADISON Co.'s, IOWA		
INCOMING CALL		
PERSON CALLING WAYNE FISHER	ADDRESS U.S. FISH AND WILDLIFE SERVICE ROCK ISLAND, IL	PHONE NUMBER AND EXTENSION (309) 793-5800
PERSON CALLED Bob Vanderjack	OFFICE NCRPD-E	PHONE NUMBER AND EXTENSION X-385
OUTGOING CALL		
PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
SUMMARY OF CONVERSATION:		
<p>1. MR FISHER HAD CALLED OUR OFFICE FOR ANOTHER PURPOSE AND I TOOK THE OPPORTUNITY TO DISCUSS THE POTENTIAL IMPACTS OF THE SUBJECT PROJECT ON FEDERALLY LISTED ENDANGERED SPECIES.</p> <p>2. WE HAD PREVIOUSLY DISCUSSED THE SUBJECT PROJECT (SEE TELECON DATED 12 MAY 1986).</p> <p>3. I ASKED MR FISHER IF HE CONCURRED WITH A DETERMINATION OF NO IMPACT TO FEDERALLY LISTED ENDANGERED SPECIES.</p> <p>4. MR FISHER SAID HE CONCURRED.</p>		
		

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE

11 June 86

SUBJECT OF CONVERSATION

Archeological Survey Section 14 Adair Co., Iowa

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
Ken Barr	NCRPD-E	x 349
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION
Kay Simpson	Iowa SHPO	515/281-8744

OUTGOING CALL

PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION

SUMMARY OF CONVERSATION:

Verbal clearance for cultural resources Adair Co. Bank Stabilization.
SHPO concurs with No Effect finding.

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ENCL 3

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INITIAL APPRAISAL REPORT FOR
SECTION 14 EMERGENCY STREAMBANK PROTECTION
MIDDLE RIVER, COUNTY ROAD P-48 BRIDGE
ADAIR COUNTY, IOWA

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WASHINGTON, DC 20510

HONORABLE TOM HARKIN, UNITED STATES SENATE
WASHINGTON DC 20510

HONORABLE CHARLES E. GRASSLEY, UNITED STATES SENATOR
721 FEDERAL BUILDING, 210 WALNUT STREET
DES MOINES, IA 50309

HONORABLE TOM HARKIN, UNITED STATES SENATOR
733 FEDERAL BUILDING, 210 WALNUT STREET
DES MOINES IA 50309

HONORABLE JIM RESS LIGHTFOOT, HOUSE OF REPRESENTATIVES
WASHINGTON DC 20515

HONORABLE JIM RESS LIGHTFOOT, REPRESENTATIVE IN CONGRESS
501 W CLEVELAND ST, SHENANDOAH IA 51601

MR. JACK RUDY, NATIONAL PARK SERVICE, USCI
ROCKY MT. REGNL OFC, P.O. BOX 25287
DENVER, CO 80225

DIRECTOR, ADVISORY COUNCIL ON HISTORIC PRESERVATION
OLD PO BLDG #809, 1100 PENNSYLVANIA AVENUE NW
WASHINGTON DC 20004

MR. ALLAN HIRSCH - DIRECTOR, OFFICE OF FEDERAL ACTIVITIES (A-104)
US ENVIRONMENTAL PROTECTION AGENCY, 401 M STREET SW
WASHINGTON DC 20460

JACK M HEINEMAN, ADVISOR ON ENVIRONMENTAL QUALITY
FEDERAL ENERGY REGULATORY COMMISSION, 825 N CAPITOL ST NE
WASHINGTON DC 20580

DEPT OF HEALTH & HUMAN SERVICES, ROOM 537F HUMPHREY BLDG
200 INDEPENDENCE AVE SW, WASHINGTON DC 20201

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OFFICE OF ENVIRONMENTAL PROJ REVIEW, ROOM 4241
DEPARTMENT OF INTERIOR, WASHINGTON, DC 20240

DIRECTOR, OFC OF HABITAT PROTECTION, NATIONAL MARINE FISHERIES SERVICE
NOAA, WASHINGTON, DC 20235

DIRECTOR, WATER RESOURCES-HDOSQ CONTROL
DIVN OF PARASITIC CIS/C-23, CENTER FOR DISEASE CONTROL
ATLANTA GA 30333

MR RICHARD NELSON - FIELD SUPERVISOR, U.S.FISH & WILDLIFE SERVICE
1430 SECOND AVE. - 2ND FLOOR, ROCK ISLAND, IL 61201

STATE CONSERVATIONIST, SOIL CONSERVATION SERVICE USDA
693 FEDERAL BLDG, 210 WALNUT STREET
DES MOINES IA 50305

DIRECTOR, US GEOLOGICAL SURVEY
WATER RESOURCES DIVISION, P.O. BOX 1230
IOWA CITY, IA 52240

REGIONAL DIRECTOR, REGION 3, U.S.FISH AND WILDLIFE SERVICE
FEDERAL BLDG FCRT SNELLING, TWIN CITIES MN 55111

EDWARD C VEST - ACTING CHIEF, ENVIRONMENTAL REVIEW BRANCH
US ENVIRON PROT AGENCY-REG VII, 726 MINNESOTA AVE
KANSAS CITY KS 66101

REGIONAL HYDROLOGIST W/CR2, NATIONAL WEATHER SERVICE
CENTRAL REGION HEADQUARTERS NOAA, 601 E 12TH ST ROOM 1836
KANSAS CITY MO 64106

REGIONAL FORESTER, FOREST SERVICE
US DEPT OF AGRICULTURE, 310 W WISCONSIN AVE-SUITE 500
MILWAUKEE WI 53203

REGIONAL ENGINEER, US ARMY ENGR DIVN NORTH CENTRAL
ATTN ENVIRON BRANCH (D F EITEL), 536 SOUTH CLARK ST
CHICAGO IL 60605-1592

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HONORABLE TERRY BRANSTAD, GOVERNOR OF IOWA
STATE CAPITOL, DES MOINES, IA 50319

OFFICE FOR PLANNING & PROGRAMMING, CAPITAL ANNEX
ATTN A THOMAS WALLACE, 523 EAST 12TH STREET
DES MOINES, IA 50319

STEPHEN BALLOU - EXEC DIRECTOR, IOWA DEPT OF WATER AIR & WASTE MGT
HENRY A WALLACE BUILDING, 900 EAST GRAND AVENUE
DES MOINES IA 50319

DIRECTOR, IOWA DEPARTMENT OF TRANSPORTATION
OFFICE OF POLICY, 800 LINCOLN WAY
AMES, IA 50010

DIRECTOR, IOWA WATER RESOURCES INSTITUTE
355 TOWN ENGINEERING BUILDING, IOWA STATE UNIVERSITY
AMES IA 50010

DR LOWELL SOIKE - DEPUTY, STATE HISTORIC PRESERVATION OFFICER
HISTORICAL BUILDING, EAST 12TH & GRAND AVENUE
DES MOINES, IA 50319

DR JOE TIFFANY, OFFICE OF STATE ARCHAEOLOGIST
EAST LAWN BUILDING, UNIVERSITY OF IOWA
IOWA CITY IA 52240

HONORABLE NORMAN RODGERS, IOWA SENATOR
RR 2, ADEL IA 50003

HONORABLE BOB SNOW, IOWA REPRESENTATIVE
604 DIVISION ST, GUTHRIE CENTER IA 50115

MR LARRY WILSON - DIRECTOR, IOWA CONSERVATION COMMISSION
WALLACE STATE OFFICE BLDG, 900 EAST GRAND AVENUE
DES MOINES IA 50319

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WINTerset IA 50273

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WINTerset IA 50273

COUNTY ENGINEER, MADISON COUNTY COURT HOUSE
WINTerset IA 50273

MAYOR & CITY COUNCIL, GREENFIELD IA 50849

MAYOR & CITY COUNCIL, WINTerset IA 50273

EXECUTIVE OFFICER, ADAIR COUNTY CONSERVATION BD
705 NE SIXTH ST, GREENFIELD IA 50849

EXECUTIVE OFFICER, MADISON COUNTY CONSERVATION BD
P.O. BOX 129, WINTerset IA 50273

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COMMANDER, US ARMY ENGINEER DISTRICT, ROCK ISLAND, CLOCK
TOWER BLDG, ROCK ISLAND, IL 61204-2004

ATTN: NCDRE-R NCRPD-E
NCRDE NCRPD-P
NCRED NCROD
NCRED-D NCRCD
NCRED-H NCRAS-L (3)
NCRPD

E AND D

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